

PARTIALLY COHERENT CONSTELLATIONS FOR MULTIPLE-ANTENNA SYSTEMS

ABSTRACT OF THE DISCLOSURE:

A signal constellation for a multiple input/multiple output (MIMO) communication system when channel knowledge at the receiver is imperfect includes at least two $(n-1)$ -dimensional sub-constellations of points that together form an n -dimensional constellation, the number n representing real dimensions and $n=2M$ where M is the number of transmit antennas. The n -dimensional spherical constellation may define a single sphere or a plurality of concentric subset spheres, and points between subsets are separated by a Kullback-Leibler distance rather than a Euclidian distance. Each sphere has sub-constellations that preferably are arranged in symmetric pairs that define equal numbers of points that lie in parallel planes, to allow recursive construction that minimizes computational complexity. An appropriate constellation may be chosen by ceasing a search once the optimum minimum distance stops increasing as a number of the concentric levels increases.